

Use Inert Gases and Pigs to Perform Pipeline Purges



Partner Reported Opportunities (PROs) for Reducing Methane Emissions

PRO Fact Sheet No. 405

Applicable sector(s):

Production Processing Transmission and Distribution

Partners reporting this PRO: Southern Natural Gas Company

Other related PROs: Use Clockspring® Repair, Inject Blowdown Gas into Low Pressure Mains, Install Ejector

Compressors/Engines	<input type="checkbox"/>
Dehydrators	<input type="checkbox"/>
Pipelines	<input checked="" type="checkbox"/>
Pneumatics/Controls	<input type="checkbox"/>
Tanks	<input type="checkbox"/>
Valves	<input type="checkbox"/>
Wells	<input type="checkbox"/>
Other	<input type="checkbox"/>

Technology/Practice Overview

Description

When pipeline segments are taken out of service for operational or maintenance purposes, it is common practice to depressurize the pipeline and vent the natural gas to the atmosphere. To prevent these emissions, partners reported using pigs and inert gas to purge pipelines.

In implementing this practice, a pig is inserted into the isolated section of pipeline. Inert gas is then pumped in behind the pig, which pushes natural gas through to the product line. At the appropriate shutoff point, the pig is caught in a pig trap and the pipeline blocked off. Once the pipeline is "gas-free" the inert gas is vented to the atmosphere.

Operating Requirements

Requires existing pig-launch and pig trap facilities and a mobile nitrogen supply.

Applicability

This practice applies to all pipeline segments that are being taken out of service for operational or maintenance purposes.

Methane Emissions Reductions

The amount of avoided methane emissions is a function of the pipeline diameter, length, and pressure. Based on the *Pipeline Rules of Thumb Handbook*, Fourth Edition, (p. 270), the amount of gas saved by the unit of application is 90 Mcf per year. One partner reported avoiding 538 Mcf of methane for 6 purges by using pigs and inert gas.

Methane Savings: 90 Mcf per year

Costs

Capital Costs (including installation)

<\$1,000 \$1,000 – \$10,000 >\$10,000

Operating and Maintenance Costs (annual)

<\$100 \$100-\$1,000 >\$1,000

Payback (Years)

0–1 1–3 3–10 >10

Benefits

Reducing methane emissions was an associated benefit of the project.

Economic Analysis

Basis for Costs and Savings

Methane emissions reductions of 90 Mcf per year apply to purging 2 miles of 10-inch diameter pipeline with nitrogen at 280-psi pressure, once per year.

Discussion

Safety, not methane savings, is the primary reason for using pigs and inert gas to purge pipelines. The economics of this PRO are based on nitrogen at \$5 per Mcf up to 50 miles from the source to the pipeline location and 2 operators working 8 hours each (labor rate of \$25 per hour). There is no capital equipment required.